

TO: FCC  
FROM: Anthony W. Hackenberg  
DATE: 03 May 2004  
SUBJ: Comment on FCC Docket 03-104 & 04-37 (NPRM on BPL)

Since the deployment of Broadband over Power Lines (BPL) threatens to adversely impact "licensed services" by "polluting" the air waves with significant noise, it is imperative that your BPL rules make it absolutely clear that BPL cannot interfere with these licensed services. They must also make it clear that BPL has no protection from interference from legally operated licensed services. The statements in your Notice of Proposed Rule Making (NPRM) regarding the protection of such services are clearly a step in the right direction. However, these statements must be buttressed by adequate technical and procedural rules, interference restrictions, and aggressive enforcement of the same. Otherwise, the outstanding public service that licensed services provide in emergencies will be difficult, if not impossible, to perform anywhere near a BPL radiation source. Your strong commitment to helping amateur radio operators resolve interference from malfunctioning utility transformers is a good example of how BPL pollution can be abated.

The Amateur Radio Relay League (ARRL) and other organizations are conducting various experiments to document the level and risk of interference that BPL poses for licensed services. To insure that your rules resulting from this NPRM are not found "arbitrary and capricious" and lacking substantive scientific underpinning, it is important for you to work closely with these organizations and to carefully consider and weigh their experimental evidence. The FCC cannot simply "stick its head in the sand" and wish away the interference problems that BPL entails. Rather, it must rationally and scientifically investigate them and tailor rules to adequately protect the licensed services based on the findings. The ARRL has valuable input and studies that the FCC Commissioners and staff should seriously consider.

Your proposed "interference mitigation" requirements, however, are a step in the wrong direction. They represent a "watering down" of the requirement that licensed services must be protected from interference from non-licensed (Part 15) services. Since it is very unlikely that a technological miracle will eliminate BPL generated interference (either at the transmitter or receiver), the anti-interference requirements need to be tightened up.

Your resulting rules also need to include the following items:

- (1) publicly accessible BPL database to facilitate interference mitigation for fixed stations; and
- (2) performance standards for BPL interference mitigation, including strict enforcement penalties for failing to resolve a complaint in a reasonable amount of time and for failure to maintain the database.

Although universal broadband service is a worthy goal, using power lines to distribute broadband services (called Broadband over Power Lines, or BPL) should not be encouraged. There are better ways to do it.

Power lines were designed to transmit electrical energy. They were not designed to transmit broadband signals, which are radio-frequency (RF) signals. When a broadband signal is put on a power line, much of the RF energy leaks off the line and radiates, causing interference to nearby radio receivers. Interference has been documented at test sites throughout the country and overseas where BPL is in operation. Recordings of actual interference at several test sites are available at [www.arrl.org/bpl](http://www.arrl.org/bpl).

The nation's 680,000 radio amateurs are especially concerned about this interference because it affects the short waves -- a unique portion of the radio spectrum that supports long-distance, intercontinental radio communication. Licensed radio amateurs use these frequencies for hurricane reporting, disaster and emergency relief, and many other purposes in accordance with FCC regulations. The Amateur Radio Service is the only 100% failsafe emergency communications capability in the world. No matter what happens, radio amateurs will be able to communicate with one another without having to rely on the expensive and vulnerable infrastructure -- but we cannot maintain our emergency networks if BPL is deployed and interferes with the weak radio signals we are trying to hear.

In addition to amateur operation, the short waves are used for international broadcasting, aeronautical, maritime, and other services including the military. Depending on the frequencies in use, BPL interference also could wipe out radio communication for many of our nation's First Responders -- police, fire, and emergency medical personnel -- who use low-band VHF radios operating in the 30-50 megahertz (MHz) range.

Radio amateurs support expanded broadband services to consumers at lower cost. Indeed, they tend to be early adopters of new technology. However, there are ways to deliver broadband that do not pollute the radio spectrum as BPL does. These include fiber-to-the-home, cable, DSL, and Broadband Wireless Access. None of these technologies causes interference to short wave radio.

BPL is sometimes touted as a solution for rural areas. It is not. A BPL signal only carries a few thousand feet down a power line and then must be repeated. This requires a lot of hardware and will not be economic in areas with low population densities.

Thus, BPL radiated RF signals will "pollute" the high frequency (HF) bands needlessly. Perhaps, if utility companies were required to re-string their power lines with shielded wiring before running BPL over them, then this pollution would not occur. Moreover, this shielding would protect the BPL customer from outages caused by "interference" from nearby licensed services.

In short, BPL has a major disadvantage that is not shared by other broadband technologies and that outweighs whatever benefit it may offer. National broadband telecommunications policy should not include support for BPL, but should focus on other, more appropriate technologies.

Respectfully submitted,

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